

## PATENT COOPERATION TREATY

PCT/PTC

22 MAR 2005

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

17.01.2005

Applicant's or agent's file reference  
C20092PCT

## IMPORTANT NOTIFICATION

International application No.  
PCT/GB 03/04191

International filing date (day/month/year)  
26.09.2003

Priority date (day/month/year)  
28.09.2002

Applicant  
COOPER CAMERON CORPORATION et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:



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## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference C20092PCT		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/04191	International filing date (day/month/year) 26.09.2003	Priority date (day/month/year) 28.09.2002	
International Patent Classification (IPC) or both national classification and IPC B63B22/18			
Applicant COOPER CAMERON CORPORATION et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 10 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input checked="" type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand  27.04.2004		Date of completion of this report  17.01.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Moya, E Telephone No. +49 89 2399-2871 	

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB 03/04191

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-38 as originally filed

**Claims, Numbers**

1-102 as originally filed

**Drawings, Sheets**

1/11-11/11 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.  
☐ paid additional fees.  
☐ paid additional fees under protest.  
☒ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.  
☒ not complied with for the following reasons:

**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.  
☒ the parts relating to claims Nos. 1-14 .

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	14
	No: Claims	1-13
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

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see separate sheet

**Point III**

1. The International Examination Authority agrees with the International Search Authority in that the present application lacks unity for the following reasons:

There are several groups of inventions:

1. Claims 1-14

Apparatus comprising

- an inner housing with two opposing inner housing ends,
- an outer housing with two opposing outer housing ends,
- the inner housing disposed fully within the outer housing and defining a cavity there between,
- structural filler within the cavity
- the structural filler consisting of spaced apart structural members,
- the structural members occupying less than 60% of the cavity.

2. Claims 15-23

Apparatus comprising

- an inner housing with two opposing inner housing ends,
- an outer housing with two opposing outer housing ends,
- the inner housing disposed fully within the outer housing and defining a cavity there between,
- a structural filler within the cavity,
- the structural filler comprising a void-free resinous phase.

3. Claims 24-45

Apparatus comprising

- an inner housing with two opposing inner housing ends,
- an outer housing with two opposing outer housing ends,
- the inner housing disposed fully within the outer housing and defining a cavity there between,
- a structural filler within the cavity,
- at least one of the housings comprising a fibre-reinforced matrix with fibres

extending from 25°-85° to the longitudinal axis of the apparatus.

4. Claims 46-58

A method for preparing an apparatus comprising

- forming an inner shell,
- applying a filler to the outer surface of the inner shell,
- forming an outer shell around the core material.

5. Claims 59-67

A method for preparing an apparatus comprising

- forming an inner shell,
- forming an outer shell,
- defining a cavity between the shells,
- filling the cavity with a filler.

6. Claims 68-87

A method for preparing an apparatus comprising

- forming an inner shell,
- applying a filler to the outer surface of the inner shell,
- forming an outer shell,
- heating and expanding the outer shell,
- locating concentrically both shells,
- allowing the outer shell to cool to mechanically engage the filler and the outer shell in an interference fit.

7. Claims 88-92

A method of deploying a buoyancy apparatus underwater comprising

- ballasting the apparatus to provide a level of buoyancy,
- positioning the apparatus at a desired location,
- withdrawing the liquid ballast from the interior of the apparatus.

8. Claims 93-96

A system for deballasting a buoyancy apparatus, comprising

- a cylinder,
- a piston moving reciprocally within the cylinder,
- a line connecting with the fluid tight cavity of the apparatus,
- a first non-return valve,
- a second non-return valve.

9. Claim 97

Apparatus comprising

- one or more shells enclosing a buoyancy cavity
- an integrity monitoring system with one or more gyroscopes

10. Claims 98-102

Apparatus comprising

- one or more shells enclosing a buoyancy cavity,
- one or more optical fibres with the shell,
- an interface indicating the level of strain in the shells.

The application contains several groups of inventions that do not contain any common technical features:

- Claims 1-87: apparatus or method for providing an apparatus comprising an inner housing, an outer housing, the inner housing fully within the outer housing defining a cavity, the cavity comprising a filler.
- Claims 88-92: a method of deploying a buoyancy apparatus underwater.
- Claims 93-96: a system for deballasting a buoyancy apparatus.
- Claim 97: apparatus comprising one or more shells enclosing a buoyancy cavity and with a monitoring system.
- Claims 98-102: apparatus comprising one or more shells, provided with optical fibres and an interface for retrieving data.

The subject matter of the several groups of inventions does comply a priori with the requirements of unity of invention set forth in Rule 13 PCT since there is not a



single common technical feature to all the groups of claims.

Further cases of lack of unity in the application:

Claims 1-87 present the following technical feature:

Apparatus (claims 1-45) or method (claims 45-87) for providing an apparatus, the apparatus comprising an inner housing or shell, an outer housing or shell, the inner housing or shell fully within the outer housing or shell defining a cavity there between, the cavity being occupied by a filler.

Document DE-A-101 14 872 discloses an apparatus comprising an inner housing or shell (10), an outer housing or shell (11), the inner housing or shell (10) being enclosed by the outer housing or shell (11) and defining a cavity there between, the cavity being occupied by a filler (13).

The common technical features are therefore not novel, thereby not complying a posteriori with the requirements of unity of invention set forth in Rule 13 PCT.

**Point V**

1. Reference is made to the following documents:

D1: US-A-3 598 275

D2: RU-C-2 115 586

D3: Robert Scott: "Fiberglass Boat Design and Construction"  
1996, SNAME, NJ, USA, XP002266595

D4: DE-A-101 14 872

D5: US-A-5 096 526

D6: WO00/61980

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1-13 does not involve an inventive step in the sense of Article 33(3) PCT.
3. Document D1, which is considered to be the closest prior art, discloses an apparatus (33) for providing an enclosure in locations of elevated pressure, the

apparatus comprising an inner housing (24) body and two opposing inner housing ends, an outer housing (23) comprising an outer housing body and two opposing outer ends (35), the inner housing (24) being disposed fully within the outer housing (23) defining an annular cavity there between, and a structural filler (38) within the cavity extending between the outer housing (23) and the inner housing (24), the structural filler comprising a plurality of spaced apart structural members (39) for transferring stress between spaced apart regions of the inner surface of the outer housing (23) to corresponding spaced apart regions of the outer surface of the inner housing (24), the structural members occupying a certain percentage of the volume of the cavity occupied by the structural filler (38).

The subject matter of claim 1 differs therefrom in that that particular percentage of the cavity volume occupied by the structural members constitutes less than 60% of the volume of the cavity.

Although D1 does not mention specifically any ratio of the members of the cavity, it appears that going to the value of claim one appears to be merely one of the multiple design choices that the skilled man would think of without the concurrence of an inventive step, when trying to define the structural components. Furthermore the figures of D1 do show that ratio although not mentioned in the specification.

Article 33 (2) PCT is therefore not complied with.

4. The subject matter of dependent claims 2-13 do not involve an inventive step either, because the subject matter of claims 2-4 is also a possibility within the teachings of D1; the subject matter of claims 5 and 10 have already been disclosed in D3; the subject matter of claims 6-9 have are anticipated by document D5, or are obvious features, like the various possible materials of a honeycomb core; and because the subject matter of claims 11-13 has already been used in the pressure resistant elements of D6.

Article 33 (2) PCT is also not met with respect to those claims.

5. None of the documents of the prior art discloses structural members being pressurized in order to pre-stress the unit to resist hydrostatic forces, as appears in claim 14.

This constitutes an alternative reinforcement which renders the structure lighter

without diminishing its structural integrity.

Articles 33 (2) and (3) PCT are met with respect to claim 14.

6. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).